Tandem Switching. These capabilities shall adhere to Bellcore specifications TCAP (GR-1432-CORE), ISUP (GR-905-CORE), Call Management (GR-1429-CORE), Switched Fractional DS1 (GR-1357-CORE), Toll Free Service (GR-1428-CORE), Calling Name (GR-1597-CORE), Line Information Database (GR-954-CORE), and Advanced Intelligent Network (GR-2863-CORE).

7.2.1.13 ILEC shall provide interfaces to adjuncts through industry standard and Bellcore interfaces. These adjuncts can include, but are not limited to, Service Node, Service Circuit Node, Voice Mail and Automatic Call Distributors. Examples of existing interfaces are ANSI ISDN standards Q.931 and Q.932.

7.2.1.14 ILEC shall provide performance data regarding a customer line, traffic characteristics or other measurable elements to MCIm, upon MCIm's request.

7.2.1.15 ILEC shall offer all Local Switching features that are technically feasible and provide feature offerings at parity to those provided by ILEC to itself or any other party. Such feature offerings shall include but are not limited to:

7.2.1.15.1 Basic and primary rate ISDN;

7.2.1.15.2 Residential features;

7.2.1.15.3 Custom Local Area Signaling Services (CLASS/LASS);

7.2.1.15.4 Custom Calling Features

7.2.1.15.5 Centrex (including equivalent administrative capabilities, such as customer accessible reconfiguration and detailed message recording); and

7.2.1.15.6 Advanced intelligent network triggers supporting MCIm features. ILEC shall offer to MCIm all AIN triggers currently available to ILEC for offering AIN-based services in accordance with applicable technical references:

7.2.1.15.6.1 Off-Hook Immediate;

7.2.1.15.6.2 Off-Hook Delay;

7.2.1.15.6.3 Private EAMF Trunk;

7.2.1.15.6.4 Shared Interoffice Trunk (EAMF, SS7)

7.2.1.15.6.5 Termination Attempt;

7.2.1.15.6.6 3/6/10;

7.2.1.15.6.7 N11;

7.2.1.15.6.8 Feature Code Dialing;

7.2.1.15.6.9 Custom Dialing Plan(s) including 555 services; and

7.2.1.15.6.10 Automatic Route Selection.

7.2.1.16 ILEC shall assign each MCIm customer line the class of service designated by MCIm (e.g., using line class codes or other switch specific provisioning methods), and shall route directory assistance calls from MCIm customers as directed by MCIm at MCIm's option. This includes each of the following call types:

7.2.1.16.1 O+/O- calls

7.2.1.16.2 911 calls

7.2.1.16.3 411/DA calls

7.2.1.16.4 InterLATA calls specific to PIC or regardless of PIC

7.2.1.16.5 IntraLATA calls specific to PIC or regardless of PIC

7.2.1.16.6 800/888 calls, prior to database query

7.1.2.16.7 Call forwarding of any type supported on the switch, to a line or a trunk

7.1.2.16.8 Any other customized routing that may be supported by the ILEC switch

7.2.1.17 ILEC shall assign each MCIm customer line the class of services designated by MCIm (e.g., using line class codes or other switch specific provisioning methods) and shall route operator calls from MCIm customers as directed by MCIm at MCIm's option. For example, ILEC may translate 0- and 0+ intraLATA traffic, and route the call through appropriate trunks to an MCIm Operator Services Position System (OSPS). Calls from Local Switching must pass the ANI-II digits unchanged.

7.2.1.18 If an MCIm customer subscribes to MCIm provided voice mail and messaging services, ILEC shall redirect incoming calls to the MCIm system based upon presubscribed service arrangements (e.g., busy, don't answer, number of rings). In addition, ILEC shall provide a Standard Message Desk Interface-Enhanced (SMDI-E) interface to the MCIm system. ILEC shall support the Inter-switch Voice Messaging Service (IVMS) capability.

7.2.1.19 Local Switching shall be offered in accordance with the requirements of the following technical references and their future releases:

7.2.1.19.1 GR-1298-CORE, AIN Switching System Generic Requirements;

7.2.1.19.2 GR-1299-CORE, AIN Switch-Service Control Point (SCP)/Adjunct Interface Generic Requirements;

7.2.1.19.3 TR-NWT-001284, AIN 0.1 Switching System Generic Requirements;

7.2.1.19.4 SR-NWT-002247, AIN Release 1 Update.

7.2.2 **Interface Requirements:**

7.2.2.1 ILEC shall provide the following interfaces to loops:

7.2.2.1.1 Standard Tip/Ring interface including loopstart or groundstart, on-hook signaling (e.g., for

calling number, calling name and message waiting lamp);

7.2.2.1.2 Coin phone signaling;

7.2.2.1.3 Basic Rate Interface ISDN adhering to ANSI standards Q.931, Q.932 and appropriate Bellcore Technical Requirements;

7.2.2.1.4 Two-wire analog interface to PBX to include reverse battery, E&M, wink start and DID;

7.2.2.1.5 Four-wire analog interface to PBX to include reverse battery, E&M, wink start and DID;

7.2.2.1.6 Four-wire DS1 interface to PBX or customer provided equipment (e.g., computers and voice response systems);

7.2.2.1.7 Primary Rate ISDN to PBX adhering to ANSI standards Q.931, Q.932 and appropriate Bellcore Technical Requirements;

7.2.2.1.8 Switched Fractional DS1 with capabilities to configure Nx64 channels (where N = 1 to 24); and

7.2.2.1.9 Loops adhering to Bellcore TR-NWT-08 and TR-NWT-303 specifications to interconnect Digital Loop Carriers.

7.2.2.2 ILEC shall provide access to the following but not limited to:

7.2.2.2.1 SS7 Signaling Network or Multi-Frequency trunking if requested by MCIm;

7.2.2.2.2 Interface to MCIm operator services systems or Operator Services through appropriate trunk interconnections for the system; and

7.2.2.2.3 Interface to MCIm directory assistance services through the MCIm switched network or to Directory Services through the appropriate trunk interconnections for the system; and 950 access or

other MCIm required access to interexchange carriers as requested through appropriate trunk interfaces.

7.3 Integrated Services Digital Network (ISDN)

7.3.1 Integrated Services Digital Network (ISDN) is defined in two variations. The first variation is Basic Rate ISDN (BRI). BRI consists of 2 Bearer (B) Channels and one Data (D) Channel. The second variation is Primary Rate ISDN (PRI). PRI consists of 23 B Channels and one D Channel. Both BRI and PRI B Channels may be used for voice, Circuit Switched Data (CSD) or Packet Switched Data (PSD). The BRI D Channel may be used for call related signaling, non-call related signaling or packet switched data. The PRI D Channel may be used for call related signaling.

7.3.2 Technical Requirements — ISDN

7.3.2.1 ILEC shall offer Data Switching providing ISDN that, at a minimum:

7.3.2.2 Provides integrated Packet handling capabilities;

7.3.2.3 Allows for full 2B+D Channel functionality for BRI; and

7.3.2.4 Allows for full 23B+D Channel functionality for PRI.

7.3.2.5 Each B Channel shall allow for voice, 64 Kbps CSD, and PSD of 128 logical channels at minimum speeds of 19 Kbps throughput of each logical channel up to the total capacity of the B Channel.

7.3.2.6 Each B Channel shall provide capabilities for alternate voice and data on a per call basis.

7.3.2.7 The BRI D Channel shall allow for call associated signaling, non-call associated signaling and PSD of 16 logical channels at minimum speeds of 9.6 Kbps throughput of each logical channel up to the total capacity of the D channel.

7.3.2.8 The PRI D Channel shall allow for call associated signaling.

7.3.3 **Interface Requirements — ISDN**

7.3.3.1 ILEC shall provide the BRI U interface using 2-wire copper loops in accordance with TR-NWT-000393, January 1991, *Generic Requirements for ISDN Basic Access Digital Subscriber Lines.*

7.3.3.2 ILEC shall provide the BRI interface using Digital Subscriber Loops adhering to Bellcore TR-NWT-303 specifications to interconnect Digital Loop Carriers.

7.3.3.3 ILEC shall offer PSD interfaces adhering to the X.25, X.75 and X.75' ANSI and Bellcore requirements.

7.3.3.4 ILEC shall offer PSD trunk interfaces operating at 56 Kbps.

Section 8. Operator Systems

See Attachment VIII, Section 6.1.2 Directory Assistance Service and 6.1.3 Operator Service.

Section 9. Common Transport

9.1 **Definition:**

Common Transport is an interoffice transmission path between ILEC Network Elements (illustrated in Figure 2) shared by carriers. Where ILEC Network Elements are connected by intra-office wiring, such wiring is provided as a part of the Network Elements and is not Common Transport. ILEC shall offer Common Transport as of the effective date of the agreement, at DS0, DS1, DS3, STS-1 or higher transmission bit rate circuits. Common Transport consists of ILEC inter-office transport facilities and is distinct and separate from local switching.

Figure 2

9.2 Technical Requirements

9.2.1 ILEC shall be responsible for the engineering, provisioning, and maintenance of the underlying equipment and facilities that are used to provide Common Transport.

9.2.2 At a minimum, Common Transport shall meet all of the requirements set forth in the following technical references (as applicable for the transport technology being used):

9.2.3. ANSI T1.101-1994, American National Standard for Telecommunications - Synchronization Interface Standard Performance and Availability;

9.2.3.1 ANSI T1.102-1993, American National Standard for Telecommunications - Digital Hierarchy - Electrical Interfaces;

9.2.3.2 ANSI T1.102.01-199x, American National Standard for Telecommunications - Digital Hierarchy - VT1.5;

9.2.3.3 ANSI T1.105-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Basic Description including Multiplex Structure, Rates and Formats;

9.2.3.4 ANSI T1.105.01-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET) Automatic Protection Switching;

9.2.3.5 ANSI T1.105.02-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Payload Mappings;

9.2.3.6 ANSI T1.105.03-1994, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Jitter at Network Interfaces;

9.2.3.7 ANSI T1.105.03a-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET): Jitter at Network Interfaces - DS1 Supplement;

9.2.3.8 ANSI T1.105.05-1994, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Tandem Connection;

9.2.3.9 ANSI T1.105.06-199x, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Physical Layer Specifications;

9.2.3.10 ANSI T1.105.07-199x, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Sub STS-1 Interface Rates and Formats;

9.2.3.11 ANSI T1.105.09-199x, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Network Element Timing and Synchronization;

9.2.3.12 ANSI T1.106-1988, American National Standard for Telecommunications - Digital Hierarchy - Optical Interface Specifications (Single Mode);

9.2.3.13 ANSI T1.107-1988, American National Standard for Telecommunications - Digital Hierarchy - Formats Specifications;

9.2.3.14 ANSI T1.107a-1990 -American National Standard for Telecommunications - Digital Hierarchy - Supplement to Formats Specifications (DS3 Format Applications);

9.2.3.15 ANSI T1.107b-1991 -American National Standard for Telecommunications - Digital Hierarchy - Supplement to Formats Specifications;

9.2.3.16 ANSI T1.117-1991, American National Standard for Telecommunications - Digital Hierarchy - Optical Interface Specifications (SONET) (Single Mode - Short Reach);

9.2.3.17 ANSI T1.403-1989, Carrier to Customer Installation, DS1 Metallic Interface Specification;

9.2.3.18 ANSI T1.404-1994, Network-to-Customer Installation - DS3 Metallic Interface Specification;

9.2.3.19 ITU Recommendation G.707, Network node interface for the synchronous digital hierarchy (SDH);

9.2.3.20 ITU Recommendation G.704, Synchronous frame structures used at 1544, 6312, 2048, 8488 and 44736 kbit/s hierarchical levels;

9.2.3.21 Bellcore FR-440 and TR-NWT-000499, Transport Systems Generic Requirements (TSGR): Common Requirements;

9.2.3.22 Bellcore GR-820-CORE, Generic Transmission Surveillance: DS1 & DS3 Performance;

9.2.3.23 Bellcore GR-253-CORE, Synchronous Optical Network Systems (SONET); Common Generic Criteria;

9.2.3.24 Bellcore TR-NWT 000507, Transmission, Section 7, Issue 5 (Bellcore, December 1993). (A module of LSSGR, FR-NWT-000064.);

9.2.3.25 Bellcore TR-NWT-000776, Network Interface Description for ISDN Customer Access;

9.2.3.26 Bellcore TR-INS-000342, High-Capacity Digital Special Access Service-Transmission Parameter Limits and Interface Combinations, Issue 1 February 1991;

9.2.3.27 Bellcore ST-TEC-000052, Telecommunications Transmission Engineering Textbook, Volume 2: Facilities, Third Edition, Issue I May 1989;

9.2.3.28 Bellcore ST-TEC-000051, Telecommunications Transmission Engineering Textbook Volume 1: Principles, Third Edition. Issue 1 August 1987;

Section 10. Dedicated Transport

10.1 **Definition:**

10.1.1 Dedicated Transport is an interoffice transmission path between MCIm designated locations to which MCIm is granted exclusive use. Such locations may include ILEC central offices or other locations, MCIm network components, other carrier network components, or customer premises. Dedicated Transport is depicted below in Figure 3.

Figure 3

10.1.2 ILEC shall offer Dedicated Transport in each of the following manners:

10.1.2.1 As capacity on a shared facility.

10.1.2.2 As a circuit (e.g., DS1, DS3, STS-1) dedicated to MCIm.

10.1.2.3 As a system (i.e., the equipment and facilities used to provide Dedicated Transport such as SONET ring) dedicated to MCIm.

10.1.3 When Dedicated Transport is provided as a circuit or as capacity on a shared facility, it shall include (as appropriate):

10.1.3.1 Multiplexing functionality;

10.1.3.2 Grooming functionality; and,

10.1.3.3 Redundant equipment and facilities necessary to support protection and restoration.

10.1.4 When Dedicated Transport is provided as a system it shall include:

10.1.4.1 Transmission equipment such as multiplexers, line terminating equipment, amplifiers, and regenerators;

10.1.4.2 Inter-office transmission facilities such as optical fiber, dark fiber, copper twisted pair, and coaxial cable;

10.1.4.3 Redundant equipment and facilities necessary to support protection and restoration; and,

10.1.4.4 Dedicated Transport includes the Digital Cross-Connect System (DCS) functionality as an option. DCS is described below in Section 10.5.

10.2 Technical Requirements

This Section sets forth technical requirements for all Dedicated Transport.

10.2.1 When ILEC provides Dedicated Transport as a circuit or a system, the entire designated transmission circuit or system (e.g., DS1, DS3, STS-1) shall be dedicated to MCIm designated traffic.

10.2.2 ILEC shall offer Dedicated Transport using currently available technologies including, but not limited to, DS1 and DS3 transport systems, SONET (or SDH) Bi-directional Line Switched Rings, SONET (or SDH) Unidirectional Path Switched Rings, and SONET (or SDH) point-to-point transport systems (including linear add-drop systems), at all available transmission bit rates.

10.2.3 When requested by MCIm, Dedicated Transport shall provide physical diversity. Physical diversity means that two circuits are provisioned in such a way that no single failure of facilities or equipment will cause a failure on both circuits.

10.2.4 When physical diversity is requested by MCIm, ILEC shall provide the maximum feasible physical separation between transmission paths for all facilities and equipment (unless otherwise agreed by MCIm).

10.2.5 Upon MCIm's request, ILEC shall provide real time and continuous remote access to performance monitoring and alarm data affecting, or potentially affecting, MCIm's traffic.

10.2.6 ILEC shall offer the following interface transmission rates for Dedicated Transport:

10.2.6.1 DS1 (Extended SuperFrame - ESF/B8ZS, D4, and unframed applications shall be provided);

10.2.6.2 DS3 (C-bit Parity, M13, and unframed applications shall be provided);

10.2.6.3 SONET standard interface rates in accordance with ANSI T1.105 and ANSI T1.105.07 and physical interfaces per ANSI T1.106.06 (including referenced

interfaces). In particular, VT1.5 based STS-1s will be the interface at an MCIm service node.

10.2.6.4 SDH Standard interface rates in accordance with International Telecommunications Union (ITU) Recommendation G.707 and Plesiochronous Digital Hierarchy (PDH) rates per ITU Recommendation G.704.

10.2.7 ILEC shall provide cross-office wiring up to a suitable Point of Termination (POT) between Dedicated Transport and MCIm designated equipment. ILEC shall provide the following equipment for the physical POT:

10.2.7.1 DSX1 for DS1s or VT1.5s;

10.2.7.2 DSX3 for DS3s or STS-1s; and

10.2.7.3 LGX for optical signals (e.g., OC-3 and OC-12).

10.2.8 ILEC shall provide physical access to the POT for personnel designated by MCIm (for testing, facility interconnection, and other purposes designated by MCIm) 24 hours a day, 7 days a week.

10.2.9 For Dedicated Transport provided as a system, ILEC shall design the system (including but not limited to facility routing and termination points) according to MCIm specifications.

10.2.10 Upon MCIm's request, ILEC shall provide MCIm with electronic provisioning control of an MCIm specified Dedicated Transport.

10.2.11 ILEC shall offer Dedicated Transport together with and separately from DCS.

10.3 Technical Requirements for Dedicated Transport Using SONET Technology.

This Section sets forth additional technical requirements for Dedicated Transport using SONET technology including rings, point-to-point systems, and linear add-drop systems.

10.3.1 All SONET Dedicated Transport provided as a system shall:

10.3.1.1 Be synchronized from both a primary and secondary Stratum 1 level timing source.

10.3.1.2 Provide SONET standard interfaces which properly interwork with SONET standard equipment from other vendors. This includes, but is not limited to, SONET standard Section, Line and Path performance monitoring, maintenance signals, alarms, and data channels.

10.3.1.3 Provide Data Communications Channel (DCC) or equivalent connectivity through the SONET transport system. Dedicated Transport provided over a SONET transport system shall be capable of routing DCC messages between MCIm and SONET network components connected to the Dedicated Transport. For example, if MCIm leases a SONET ring from ILEC, that ring shall support DCC message routing between MCIm and SONET network components connected to the ring.

10.3.1.4 Support the following performance requirements for each circuit (STS-1, DS1, DS3, etc.):

10.3.1.4.1 No more than 10 Errored Seconds Per Day (Errored Seconds are defined in the technical reference at Section 10.4.5); and

10.3.1.4.2 No more than 1 Severely Errored Second Per Day (Severely Errored Seconds are defined in the technical reference at Section 10.4.5).

10.3.2 SONET rings shall:

10.3.2.1 Be provisioned on physically diverse fiber optic cables (including separate building entrances where available and diversely routed intraoffice wiring). "Diversely routed" shall be interpreted as the maximum feasible physical separation between transmission paths, unless otherwise agreed by MCIm.

10.3.2.2 Support dual ring interworking per SONET Standards.

10.3.2.3 Provide the necessary redundancy in optics, electronics, and transmission paths (including intra-office wiring) such that no single failure will cause a service interruption.

10.3.2.4 Provide the ability to disable ring protection switching at MCIm's direction (selective protection lock-out). This requirement applies to line switched rings only.

10.3.2.5 Provide the ability to use the protection channels to carry traffic (extra traffic). This requirement applies to line switched rings only.

10.3.2.6 Provide 50 millisecond restoration unless a ring protection delay is set to accommodate dual ring interworking schemes.

10.3.2.7 Have settable ring protection switching thresholds that shall be set in accordance with MCIm's specifications.

10.3.2.8 Provide revertive protection switching with a settable wait to restore delay with a default setting of 5 minutes. This requirement applies to line switched rings only.

10.3.2.9 Provide non-revertive protection switching. This requirement applies to path switched rings only.

10.3.2.10 Adhere to the following availability requirements, where availability is defined in the technical reference set forth in Section 10.4.5.

10.3.2.10.1 No more than 0.25 minutes of unavailability month; and

10.3.2.10.2 No more than 0.5 minutes of unavailability per year.

10.4 At a minimum, Dedicated Transport shall meet each of the requirements set forth in Section 9.2.3 and in the following technical references.

10.4.1 ANSI T1.105.04-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Data Communication Channel Protocols and Architectures;

10.4.2 ANSI T1.119-1994, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Operations, Administration, Maintenance, and Provisioning (OAM&P) Communications;

10.4.3 ANSI T1.119.01-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET) Operations, Administration, Maintenance, and Provisioning (OAM&P) Communications Protection Switching Fragment;

10.4.4 ANSI T1.119.02-199x, American National Standard for Telecommunications - Synchronous Optical Network (SONET) Operations, Administration, Maintenance, and Provisioning (OAM&P) Communications Performance Monitoring Fragment;

10.4.5 ANSI T1.231-1993 -American National Standard for Telecommunications - Digital Hierarchy - Layer 1 In-Service Digital Transmission performance monitoring.

10.5 Digital Cross-Connect System (DCS)

10.5.1 Definition:

10.5.1.1 DCS is a function which provides automated cross connection of Digital Signal level 0 (DS0) or higher transmission bit rate digital channels within physical interface facilities. Types of DCSs include but are not limited to DCS 1/0s, DCS 3/1s, and DCS 3/3s, where the nomenclature 1/0 denotes interfaces typically at the DS1 rate or greater with cross-connection typically at the DS0 rate. This same nomenclature, at the appropriate rate substitution, extends to the other types of DCSs specifically cited as 3/1 and 3/3. Types of DCSs that cross-connect Synchronous Transport Signal level 1 (STS-1 s) or other Synchronous Optical Network (SONET) signals (e.g., STS-3) are also DCSs, although not denoted by this same type of nomenclature. DCS may provide the functionality of more than one of the aforementioned DCS types (e.g., DCS 3/3/1 which combines functionality of DCS 3/3 and DCS 3/1). For such DCSs, the requirements will be, at least, the aggregation of requirements on the "component" DCSs.

10.5.1.2 In locations where automated cross connection capability does not exist, DCS will be defined as the combination of the functionality provided by a Digital Signal Cross-Connect (DSX) or Light Guide Cross-Connect (LGX) patch panels and D4 channel banks or other DS0 and above multiplexing equipment used to provide the function of a manual cross connection.

10.5.1.3 Interconnection between a DSX or LGX, to a switch, another cross-connect, or other service platform device, is included as part of DCS.

10.6 DCS Technical Requirements

10.6.1 DCS shall provide completed end-to-end cross connection of the channels designated by MCIm.

10.6.2 DCS shall perform facility grooming, multipoint bridging, one-way broadcast, two-way broadcast, and facility test functions.

10.6.3 DCS shall provide multiplexing, format conversion, signaling conversion, or other functions.

10.6.4 The end-to-end cross connection assignment shall be input to the underlying device used to provide DCS from an operator at a terminal or via an intermediate system. The cross connection assignment shall remain in effect whether or not the circuit is in use.

10.6.5 ILEC shall continue to administer and maintain DCS, including updates to the control software to current available releases.

10.6.6 ILEC shall provide various types of Digital Cross-Connect Systems including:

10.6.6.1 DS0 cross-connects (typically termed DCS 1/0);

10.6.6.2 DS1/VT1.5 (Virtual Tributaries at the 1.5Mbps rate) cross-connects (typically termed DCS 3/1);

10.6.6.3 DS3 cross-connects (typically termed DCS 3/3);

10.6.6.4 STS-1 cross-connects; and

10.6.6.5 Other technically feasible cross-connects designated by MCIm.

10.6.7 ILEC shall provide immediate and continuous configuration and reconfiguration of the channels between the physical interfaces (i.e., ILEC shall establish the processes to implement cross connects on demand, or, at MCIm's option, permit MCIm control of such configurations and reconfigurations).

10.6.8 ILEC shall provide scheduled configuration and reconfiguration of the channels between the physical interfaces (i.e., ILEC shall establish the processes to implement cross connects on the schedule designated by MCIm, or, at MCIm's option, permit MCIm to control such configurations and reconfigurations).

10.6.9 DCS shall continuously monitor protected circuit packs and redundant common equipment.

10.6.10 DCS shall automatically switch to a protection circuit pack on detection of a failure or degradation of normal operation.

10.6.11 The underlying equipment used to provide DCS shall be equipped with a redundant power supply or a battery back-up.

10.6.12 ILEC shall make available to MCIm spare facilities and equipment necessary for provisioning repairs, and to meet MCIm's maintenance standards as specified in the Provisioning and Maintenance sections.

10.6.13 At MCIm's option, ILEC shall provide MCIm with real time performance monitoring and alarm data on the signals and the components of the underlying equipment used to provide DCS that actually impact or might impact MCIm's services. For example, this may include hardware alarm data and facility alarm data on a DS3 in which an MCIm DS1 is traversing.

10.6.14 At MCIm's option, ILEC shall provide MCIm with real time ability to initiate tests on integrated equipment used to test the signals and the underlying equipment used to provide DCS, as well as other integrated functionality for routine testing and fault isolation.

10.6.15 DCS shall provide SONET to asynchronous gateway functionality (e.g., STS-1 to DS1 or STS-1 to DS3).

10.6.16 DCS shall perform optical to electrical conversion where the underlying equipment used to provide DCS contains optical

interfaces or terminations (e.g., Optical Carrier level 3, i.e., OC-3, interfaces on a DCS 3/1).

10.6.17 DCS shall have SONET ring terminal functionality where the underlying equipment used to provide DCS acts as a terminal on a SONET ring.

10.6.18 DCS shall provide multipoint bridging of multiple channels to other DCSs. MCIm may designate multipoint bridging to be one-way broadcast from a single master to multiple tributaries, or two-way broadcast between a single master and multiple tributaries.

10.6.19 DCS shall multiplex lower speed channels onto a higher speed interface and demultiplex higher speed channels onto lower speed interfaces as designated by MCIm.

10.7 **DCS Interface Requirements**

10.7.1 ILEC shall provide physical interfaces on DS0, DS1, and VT1.5 channel cross-connect devices at the DS1 rate or higher. In all such cases, these interfaces shall be in compliance with applicable Bellcore, ANSI, ITU, and MCIm standards.

10.7.2 ILEC shall provide physical interfaces on DS3 channel cross-connect devices at the DS3 rate or higher. In all such cases, these interfaces shall be in compliance with applicable Bellcore, ANSI, ITU, and MCIm standards.

10.7.3 ILEC shall provide physical interfaces on STS-1 cross-connect devices at the OC-3 rate or higher. In all such cases, these interfaces shall be in compliance with applicable Bellcore, ANSI, ITU, and MCIm standards.

10.7.4 Interfaces on all other cross-connect devices shall be in compliance with applicable Bellcore, ANSI, ITU, and MCIm standards.

10.8 DCS shall, at a minimum, meet all the requirements set forth in the following technical references:

10.8.1 ANSI T1.102-1993, American National Standard for Telecommunications - Digital Hierarchy - Electrical Interfaces;

10.8.2 ANSI T1.102.01-199x, American National Standard for Telecommunications - Digital Hierarchy - VT1.5;

10.8.3 ANSI T1.105-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Basic Description including Multiplex Structure, Rates and Formats;

10.8.4 ANSI T1.105.03-1994, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Jitter at Network Interfaces;

10.8.5 ANSI T1.105.03a-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET): Jitter at Network Interfaces - DS1 Supplement;

10.8.6 ANSI T1.105.06-199x, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Physical Layer Specifications;

10.8.7 ANSI T1.106-1988, American National Standard for Telecommunications - Digital Hierarchy - Optical Interface Specifications (Single Mode);

10.8.8 ANSI T1.107-1988, American National Standard for Telecommunications - Digital Hierarchy - Formats Specifications;

10.8.9 ANSI T1.107a-1990, American National Standard for Telecommunications - Digital Hierarchy - Supplement to Formats Specifications (DS3 Format Applications);

10.8.10 ANSI T1.107b-1991, American National Standard for Telecommunications - Digital Hierarchy - Supplement to Formats Specifications;

10.8.11 ANSI T1.117-1991, American National Standard for Telecommunications - Digital Hierarchy - Optical Interface Specifications (SONET) (Single Mode - Short Reach);

10.8.12 ANSI T1.403-1989, Carrier to Customer Installation, DS1 Metallic Interface Specification:

10.8.13 ANSI T1.404-1994, Network-to-Customer Installation - DS3 Metallic Interface Specification;

10.8.14 ITU Recommendation G.707, Network node interface for the synchronous digital hierarchy (SDH);

10.8.15 ITU Recommendation G.704, Synchronous frame structures used at 1544, 6312, 2048, 8488 and 44736 kbit/s hierarchical levels;

10.8.16 FR-440 and TR-NWT-000499, Transport Systems Generic Requirements (TSGR): Common Requirements;

10.8.17 GR-820-CORE, Generic Transmission Surveillance: DS1 & DS3 Performance;

10.8.18 GR-253-CORE, Synchronous Optical Network Systems (SONET); Common Generic Criteria; and

10.8.19 TR-NWT-000776, Network Interface Description for ISDN Customer Access.

Section 11. Signaling Link Transport

11.1 **Definition**:

Signaling Link Transport is a set of two or four dedicated 56 Kbps transmission paths between MCIm-designated Signaling Points of Interconnection (SPOI) that provides appropriate physical diversity and a cross connect at an ILEC STP site.

11.2 **Technical Requirements**

11.2.1 Signaling Link Transport shall consist of full duplex mode 56 Kbps transmission paths.

11.2.2 Of the various options available, Signaling Link Transport shall perform in the following two ways:

11.2.2.1 As an "A-link" which is a connection between a switch or SCP and a home Signaling Transfer Point Switch (STPs) pair; and

11.2.2.2 As a "D-link" which is a connection between two STPs pairs in different company networks (e.g., between two STPs pairs for two Competitive Local Exchange Carriers (CLECs)).

11.2.3 Signaling Link Transport shall consist of two or more signaling link layers as follows:

11.2.3.1 An A-link layer shall consist of two links.

11.2.3.2 A D-link layer shall consist of four links.

11.2.4 A signaling link layer shall satisfy a performance objective such that:

11.2.4.1 There shall be no more than two minutes down time per year for an A-link layer, and

11.2.4.2 There shall be negligible (less than 2 seconds) down time per year for a D-link layer.

11.2.5 A signaling link layer shall satisfy interoffice and intraoffice diversity of facilities and equipment, such that:

11.2.5.1 No single failure of facilities or equipment causes the failure of both links in an A-link layer (i.e., the links should be provided on a minimum of two separate physical paths end-to-end); and

11.2.5.2 No two concurrent failures of facilities or equipment shall cause the failure of all four links in a D-link layer (i.e., the links should be provided on a minimum of three separate physical paths end-to-end).

11.3 **Interface Requirements**

11.3.1 There shall be a DS1 (1.544 Mbps) interface at the MCIm-designated SPOIs. Each 56 Kbps transmission path shall appear as a DS0 channel within the DS1 interface.

Section 12. Signaling Transfer Points (STPs)

12.1 **Definition**:

Signaling Transfer Points (STPs) provide functionality that enable the exchange of SS7 messages among and between switching elements, database elements and signaling transfer points. Figure 4 depicts Signaling Transfer Points.

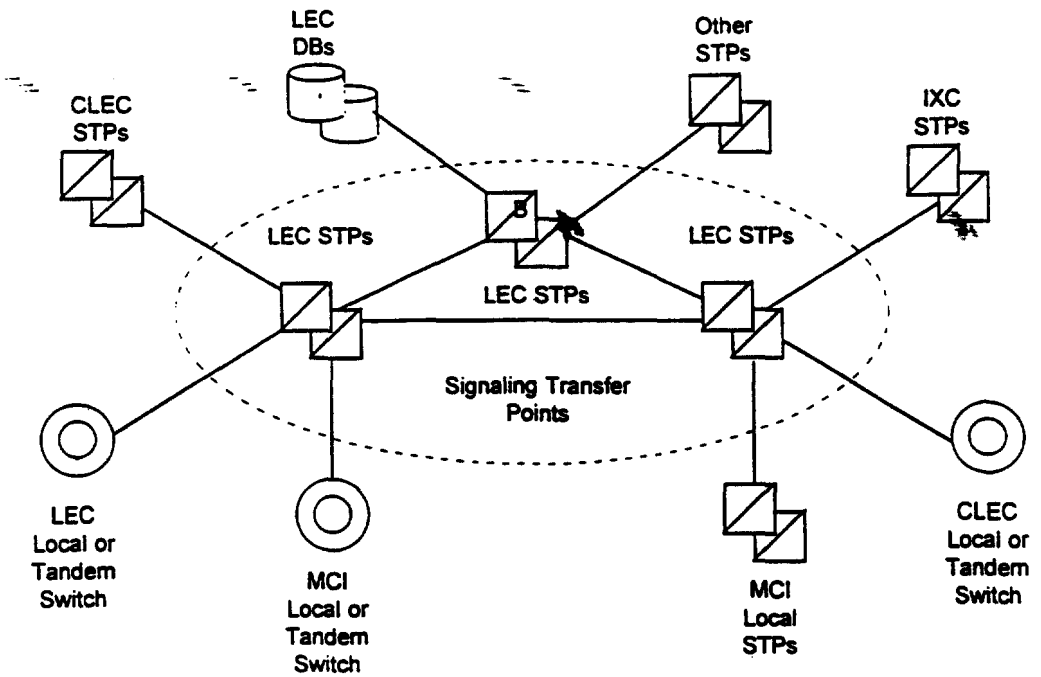

Figure 4

12.2 Technical Requirements

12.2.1 STPs shall provide access to all other Network Elements connected to the ILEC SS7 network. These include:

12.2.1.1 ILEC Local Switching or Tandem Switching;

12.2.1.2 ILEC Service Control Points/DataBases;

12.2.1.3 Third-party local or tandem switching systems; and

12.2.1.4 Third-party-provided STPs.

12.2.2 The connectivity provided by STPs shall fully support the functions of all other Network Elements connected to ILEC's SS7 network. This explicitly includes the use of ILEC's SS7 network to convey messages which neither originate nor terminate at a signaling end point directly connected to the ILEC SS7 network (i.e., transit messages). When the ILEC SS7 network is used to

convey transit messages, there shall be no alteration of the Integrated Services Digital Network User Part (ISDNUP) or Transaction Capabilities Application Part (TCAP) user data that constitutes the content of the message.

12.2.3 If a ILEC tandem switch routes calling traffic, based on dialed or translated digits on SS7 trunks between an MCIm local switch and third party local switch, ILEC's SS7 network shall convey the TCAP messages that are necessary to provide Call Management features (Automatic Callback, Automatic Recall, and Screening List Editing) between the MCIm local STPs and the STPs that provide connectivity with the third party local switch, even if the third party local switch is not directly connected to ILEC's STPs.

12.2.4 STPs shall provide all functions of the MTP as specified in ANSI T1.111 (Reference 12.5.2). This includes:

12.2.4.1 Signaling Data Link functions, as specified in ANSI T1.111.2;

12.2.4.2 Signaling Link functions, as specified in ANSI T1.111.3; and

12.2.4.3 Signaling Network Management functions, as specified in ANSI T1.111.4.

12.2.5 STPs shall provide all functions of the SCCP necessary for Class 0 (basic connectionless) service, as specified in ANSI T1.112 (Reference 12.5.4). In particular, this includes Global Title Translation (GTT) and SCCP Management procedures, as specified in T1.112.4.

12.2.6 In cases where the destination signaling point is a ILEC local or tandem switching system or data base, or is an MCIm or third party local or tandem switching system directly connected to ILEC's SS7 network, ILEC STPs shall perform final GTT of messages to the destination and SCCP Subsystem Management of the destination. In all other cases, STPs shall perform intermediate GTT of messages to a gateway pair of STPs in an SS7 network connected with the ILEC SS7 network, and shall not perform SCCP Subsystem Management of the destination.

12.2.6 STPs shall also provide the capability to route SCCP messages based on ISNI, as specified in ANSI T1.118 (Reference 12.5.7), when this capability becomes available on ILEC STPs.

12.2.7 STPs shall provide all functions of the OMAP commonly provided by STPs, as specified in the reference in Section 12.5.6. This includes:

12.2.7.1 MTP Routing Verification Test (MRVT); and,

12.2.7.2 SCCP Routing Verification Test (SRVT).

12.2.8 In cases where the destination signaling point is a ILEC local or tandem switching system or DB, or is an MCIm or third party local or tandem switching system directly connected to the ILEC SS7 network, STPs shall perform MRVT and SRVT to the destination signaling point. In all other cases, STPs shall perform MRVT and SRVT to a gateway pair of STPs in an SS7 network connected with the ILEC SS7 network. This requirement shall be superseded by the specifications for Internetwork MRVT and SRVT if and when these become approved ANSI standards and available capabilities of ILEC STPs.

12.2.9 STPs shall be equal to or better than the following performance requirements:

12.2.9.1 MTP Performance, as specified in ANSI T1.111.6; and

12.2.9.2 SCCP Performance, as specified in ANSI T1.112.5.

12.2.10 **SS7 Advanced Intelligent Network (AIN) Access**

12.2.10.1 SS7 AIN Access shall provide the MCIm SCP access to the ILEC local switch via interconnection of the ILEC SS7 and MCIm SS7 networks. This interconnection arrangement shall result in the ILEC local switch recognizing the MCIm SCP as at least at parity with ILEC's SCPs in terms of interfaces, performance and capabilities.

12.2.10.2 SS7 AIN Access is the provisioning of AIN triggers in a ILEC local switch and interconnection of the ILEC SS7 network with the MCIm SS7 network to exchange

TCAP queries and responses with an MCIm SCP. See Figure 5 below.

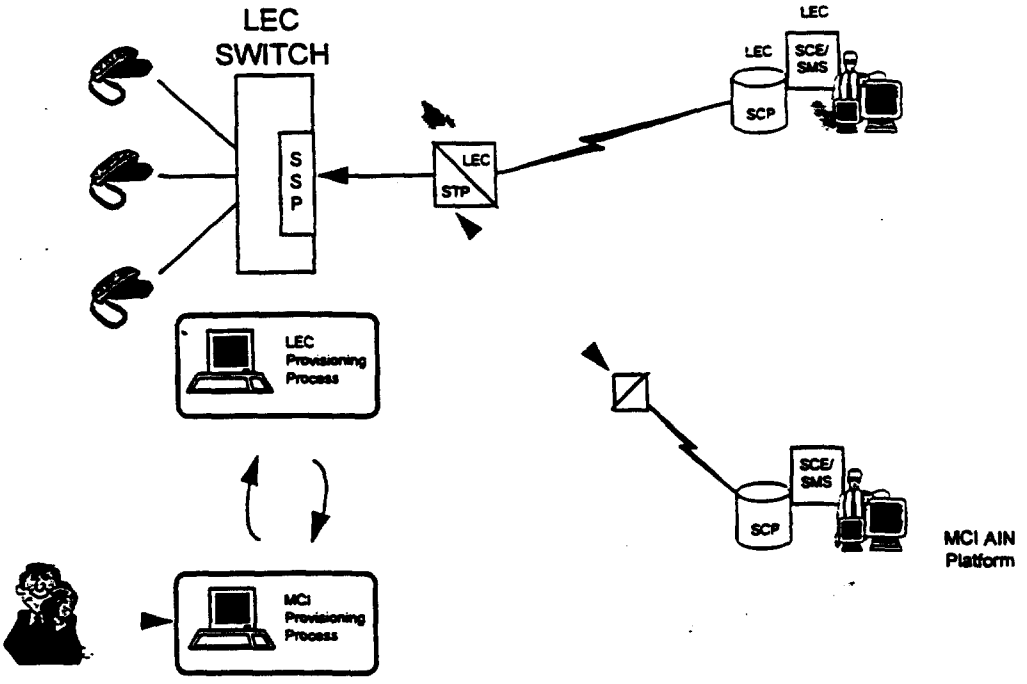

Figure 5

12.2.10.3 Physical interconnection between the ILEC SS7 and the MCIm SS7 networks shall be through facilities and protocols as specified in the SS7 Network Interconnection section of this Agreement.

12.2.10.4 Reliability of interconnection shall be consistent with requirements for diversity and survivability as specified in the SS7 Network Interconnection section of this Agreement.

12.2.10.5 Delay associated with ILEC local switch queries to the MCIm SCP shall be equal to or shorter than the delay associated with queries to the ILEC SCP.

12.2.10.6 ILEC STPs shall maintain global title translations necessary to direct AIN queries for select global title address and translation type values to the MCIm SS7 network.

12.2.10.7 ILEC STPs shall route AIN responses from the MCIm SCP via SS7 network interconnect to the local switch